Delta-Sigma Modulated Laser Detection Circuit (Tier 1)

Completed Technology Project (2013 - 2016)

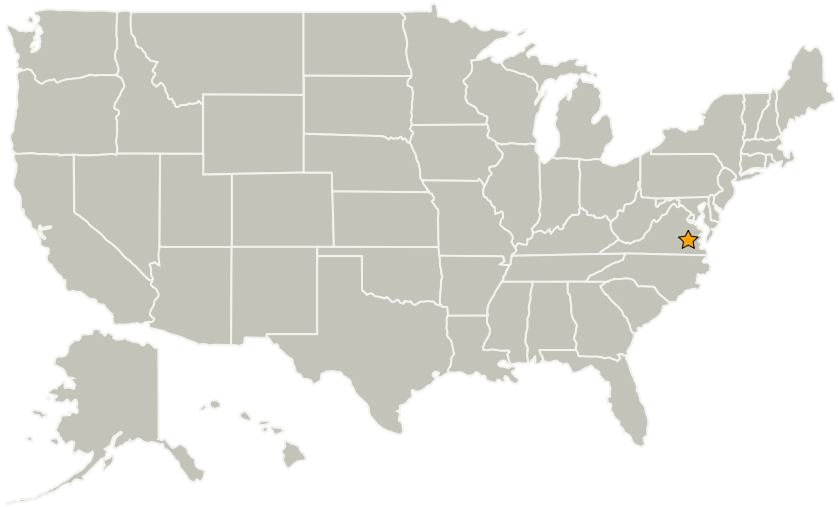
Project Introduction

The use of mixed-signal processing techniques implemented on integrated circuitry allows the detection of pico-watt optical signals. By using ratiometric methods, a real-time reading of differential absorption lidar information may be obtained. The system provides correlated measures between differing photodetector types allowing direct ratio measures between different species of absorbing materials.

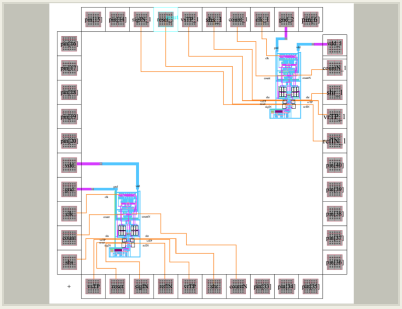
Anticipated Benefits

N/A

Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
★Langley Research Center(LaRC)	Lead Organization	NASA Center	Hampton, Virginia



40-pin integrated circuit physical layout

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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Langley Research Center (LaRC)

Responsible Program:

Center Innovation Fund: LaRC CIF

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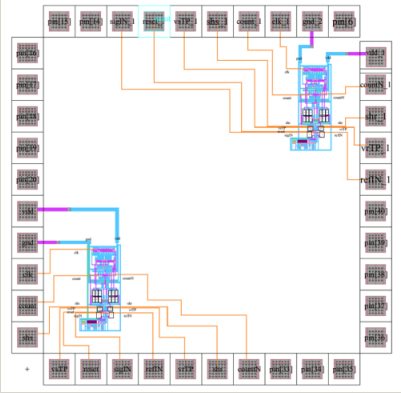
Completed Technology Project (2013 - 2016)

Co-Funding Partners	Type	Location
University of Arizona	Academia Alaska Native and Native Hawaiian Serving Institutions (ANNH)	Tucson, Arizona

Images



Dual-channel differential absorption lidar detector
40-pin integrated circuit physical layout
(https://techport.nasa.gov/image/18372)

Project Management

Program Director:
Michael R Lapointe

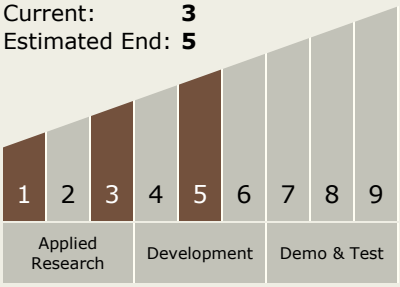
Program Manager:
Julie A Williams-byrd

Project Manager:
Thomas D Mcglone

Principal Investigator:
Thomas D Mcglone

Technology Maturity (TRL)

Start: **1**
Current: **3**
Estimated End: **5**



Technology Areas

Primary:

- TX08 Sensors and Instruments
  - TX08.1 Remote Sensing Instruments/Sensors
    - TX08.1.5 Lasers